	Application No.	Applicant(s)
Notice of Allowability	10/661,412	ARONOFF ET AL.
	Examiner	Art Unit
	Cheryl Lewis	2167

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the applicants' communication filed July 24, 2006.*

2. ☒ The allowed claim(s) is/are *1-6 and 8-26, the claims have been renumbered as claims 1-25.*

3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some*   c) ☐ None of the:

       1. ☐ Certified copies of the priority documents have been received.

       2. ☐ Certified copies of the priority documents have been received in Application No. _____ .

       3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

    * Certified copies not received: _____ .

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

5. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.

    (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached

       1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____ .

    (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date <u>11/24/06</u>.

    Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)

2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)

3. ☒ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date <u>7/24/06</u>

4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material

5. ☐ Notice of Informal Patent Application

6. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____ .

7. ☒ Examiner's Amendment/Comment

8. ☐ Examiner's Statement of Reasons for Allowance

9. ☒ Other *See Continuation Sheet.*

Continuation of Attachment(s) 9. Other: updated IDS's 3/18/04, 5/24/04, and 8/25/05. These IDS's have been updated to include the class & subclass.

DETAILED ACTION

1.   Claims 1-6 and 8-26 are allowed.

2.   The applicants have cancelled claim 7 in the amendment received on July 24, 2006.

Drawings

3.   Drawing figures 1-3 and 5-12 filed on September 11, 2003 are approved by the examiner. However, a corrected drawing for figure 4 must be submitted because of the reasons set forth below in the examiner's amendment to the drawings.

EXAMINER'S AMENDMENT

4.   An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in an interview with Christian Fox on November 20, 2006.

5.   In the Specification, on page 1, paragraph [0001], delete ##/###,### and replace with 10/662,039; and

on page 20, paragraph [0075], after 'No. 09/782,586,' insert Pat. No. 7,065,538.

6.   Claims 1 and 17 have been amended as follows:

Claim 1.   (Currently Amended) A method of providing highly-available database clusters which replicate at least one data file, the method comprising:

receiving with a first computing system one or more data requests from a client application over a first client connection, the one or more data requests requesting access to data of a first data file;

associating a timestamp with each data request;

forwarding each data request to a first database management system of the first computing system, the first database management system being capable of accessing the data of the first data file according to the data request;

forwarding each data request and each associated timestamp to a memory;

forwarding replication data to the memory, wherein the replication data is sufficient to indicate changes made to the data of the first data file based on the one or more data requests and wherein each replication data includes a timestamp;

comparing the timestamps of one or more of the replication data to the timestamps of one or more of the data requests;

when the one or more of the data requests are determined to be redundant to the one or more of the replication data based on the timestamps, purging one of (a) one or more of the data requests and (b) one or more of the replication data;

forwarding the other of (a) and (b) to a second database management system of a second computing system, the second database management system being capable of accessing data of a second data file;

determining a need to move the first client connection to a second client connection with the second computing system; and

moving the first client connection to the second client connection in a manner ~~allowing the client application to not fail~~ preventing the client application from failing.

17.   (Currently Amended) A method of performing replication in a database cluster having client connection failover, the method comprising:

monitoring a first system with a second system wherein at least a portion of a first data file of the first system is replicated in a second data file of the second system, wherein said replication further comprises;

storing replication data indicating changes made to data of the first data file based on at least one data request from a client application to the first system,

when one or more of the at least one data request is determined to be redundant to one or more of the replication data, purging one of (a) one or more of the at least one data request and (b) one or more of the replication data, and

forwarding the other of (a) and (b) to the second system;

> > determining a need to move communication over a first connection
> >
> > between a client application and the first data file through the first system
> >
> > to a second connection between the client application and the second
> >
> > data file through the second system; and
> >
> > > moving the communication to the second connection in a manner
> > >
> > > ~~allowing the client application to not fail~~ <u>preventing the client application</u>
> > >
> > > <u>from failing</u>.

7.   The following changes to the drawings have been approved by the examiner and

agreed upon by applicant: The examiner has amended drawing figure 4, element 427.

Element 427 has been changed from "source" system to "target" system. The correct

description for element 427 is presented in paragraphs 0063 and 0065 of the

Specification. In order to avoid abandonment of the application, applicant must make

these above agreed upon drawing changes.

REASONS FOR ALLOWANCE.

8.   The following is a statement of reasons for the indication of allowable subject

matter:

Applicants' response filed on July 24, 2006 overcomes the prior art rejection

under 35 USC § 102(e) by Holenstein.

The prior art of record does not render obvious to one ordinarily skilled in the art

at the time of applicant's invention nor anticipate the combination of claimed elements

including 'receiving with a first computing system one or more data requests from a

client application over a first client connection, the one or more data requests requesting

access to data of a first data file'; 'associating a timestamp with each data request';

'forwarding replication data to the memory, wherein the replication data is sufficient to

indicate changes made to the data of the first data file based on the one or more data

requests and wherein each replication data includes a timestamp'; 'when the one or

more of the data requests are determined to be redundant to the one or more of the

replication data based on the timestamps, purging one of (a) one or more of the data

requests and (b) one or more of the replication data'; and 'moving the first client

connection to the second client connection in a manner preventing the client application

from failing' as recited in independent claim 1 and similarly recited in independent claim

17.

The remaining claims, 2-6, 8-16, and 18-26 are dependent claims, thus these

claims are patently distinct over the art of record for at least the above reasons.

Any comments considered necessary by applicant must be submitted no later

than the payment of the issue fee and, to avoid processing delays, should preferably

accompany the issue fee. Such submissions should be clearly labeled "Comments on

Statement of Reasons for Allowance."

CONCLUSION

9.   The prior art made of record and not relied upon is considered pertinent to

Applicant's disclosure.

     A.   Champagne et al. (U.S. Pat. No. 6,925,477) discloses transferring records between two databases;

     B.   Carlson (Pat. No. 6,377,959) discloses redundant database recovery through concurrent update and copy procedures;

     C.   Moshaiov et al. (Pat. No. 6,256,634) discloses a method and system for purging tombstones for deleted data items in a replicated database; and

     D.   Demers et al. (Pat. No. 5,603,026) discloses an application-specific conflict resolution for weakly consistent replicated databases.

NAME OF CONTACT

10.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cheryl Lewis whose telephone number is (571) 272-4113. The examiner can normally be reached on 6:30-3:00.

     If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on (571) 272-7079. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

     (571) 273-4113 (Use this FAX #, only after approval by Examiner, for "INFORMAL" or "DRAFT" communication. Examiners may request that a formal paper/amendment be faxed directly to them on occasions.).

Any inquiry of a general nature or relating to the status of this application or

proceeding should be directed to the receptionist/ Technology Center (571) 272-2100.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see http://pair-direct.uspto.gov.

Should you have questions on access to the Private PAIR system, contact the

Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Cheryl Lewis
Patent Examiner
November 24, 2006

LOOSELY COUPLED DATABASE CLUSTERS WITH CLIENT CONNECTION FAIL-OVER
Inventor's Name: UNDETERMINED
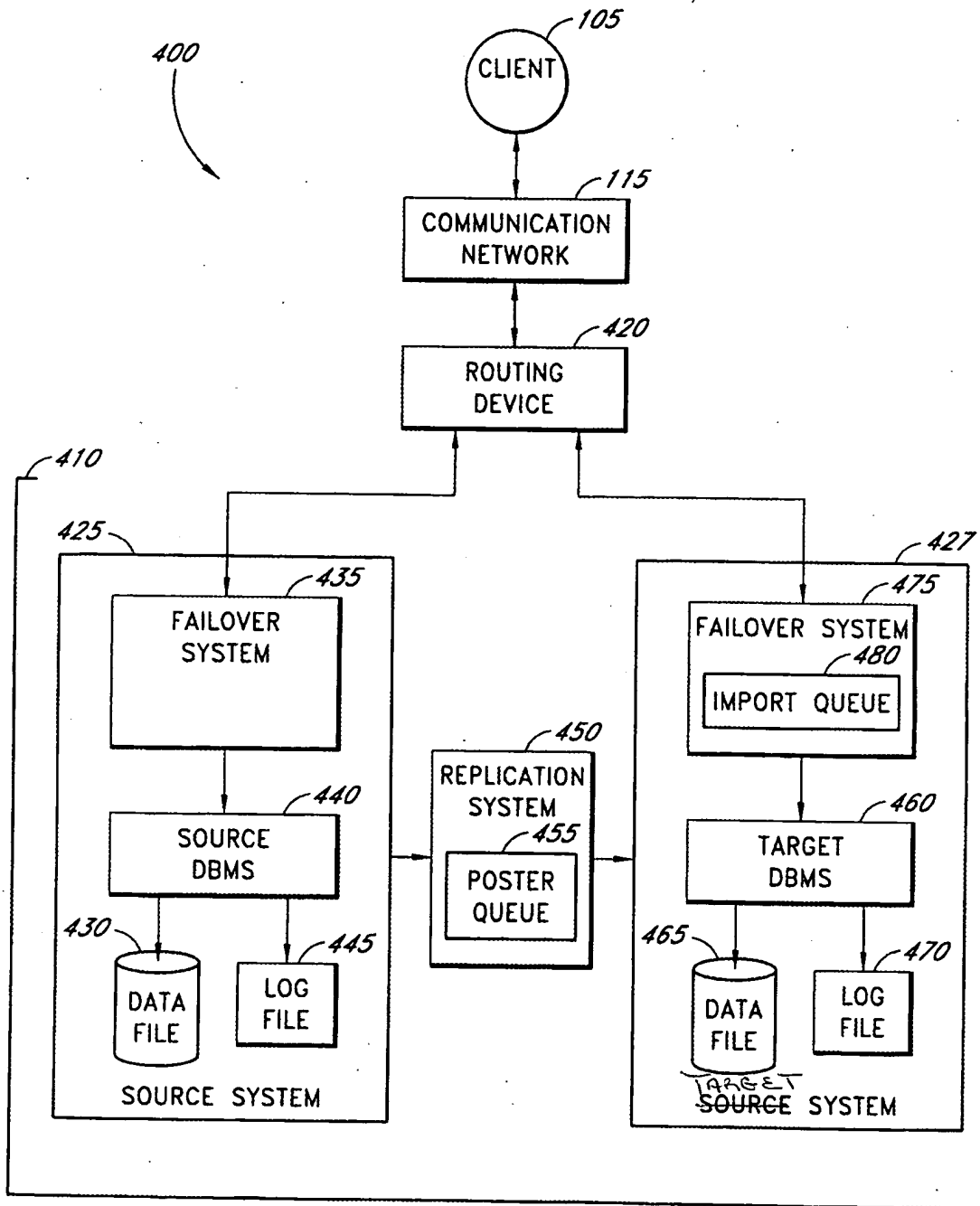Appl. No.: Unknown   Atty Docket: QSOFT.150A

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FIG. 4